

**Claims**

1. Process for the preparation of  $\text{LiAlH}_4$  solutions, in which lithium hydride reacts with an aluminium halide in diethyl ether to give lithium aluminium hydride, and the lithium halide which arises is separated off, characterised in that a solvent the  
5       complexing energy of which with  $\text{LiAlH}_4$  is greater than the complexing energy of diethyl ether with  
10        $\text{LiAlH}_4$  is then added, and the diethyl ether is removed by distillation.
2. Process according to Claim 1, characterised in that one or more ethers are utilised as the solvent.  
15
3. Process according to Claim 1 or 2, characterised in that tetrahydrofuran (THF), 2-methyltetrahydrofuran or an ether from the group comprising ethyl glycol ethers (such as monoglycol dimethyl ether,  
20       monoglycol diethyl ether, diglycol dimethyl ether, diglycol diethyl ether or diglycol dibutyl ether) is utilised as the solvent.
4. Process according to one of Claims 1 to 3,  
25       characterised in that  $\text{AlCl}_3$  is utilised as the aluminium halide.
5. Process according to one of Claims 1 to 4,  
30       characterised in that the synthesis solution of  $\text{LiAlH}_4$  in diethyl ether is concentrated by distilling off the diethyl ether.
6. Process according to one of Claims 1 to 5,  
35       characterised in that a quantity of solvent at least equivalent (on a molar basis) to the residual diethyl ether quantity is added.

7. Process according to one of Claims 1 to 6,  
characterised in that the diethyl ether is distilled  
off under vacuum at temperatures of from 40 to 80°C.
- 5 8. Process according to Claim 7, characterised in that  
the distillation takes place at temperatures of from  
55 to 65°C.
- 10 9. Process according to one of Claims 1 to 8,  
characterised in that the  $\text{LiAlH}_4$  solution is diluted  
with a hydrocarbon.